INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

Rosie Interactive Task Learning System

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Category
Software
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OVERVIEW

Interactive Task Learning agent that learns variety of tasks from natural language interactions

- Capable of transferring knowledge across tasks and resolving ambiguities
- Open sourced under BSD license

BACKGROUND

Interactive Task Learning ("ITL") focuses on learning the definition of tasks through online natural language instruction in real time. ITL systems often utilize natural language processing (NLP) to process verbal instructions and to communicate effectively with human users. Understanding context, intent, and the subtleties of human language is critical to the effectiveness of ITL. However, the correct grounded meaning of the instructions is difficult due to ambiguous words, lack of common ground, and the presence of distractors in the environment and the agent's knowledge. So, a need exists for improvements in ITL interactions to optimize its usefulness.

INNOVATION

Researchers at the University of Michigan's Soar Lab have developed "Rosie," a learning strategy embodied in an Interactive Task Learning ("ITL") agent that learns a wide array of tasks from natural language interactions with a human instructor. Rosie has a custom natural language parser for the interpretation of a restricted subset of English, and is pre-programmed with planning, reasoning, and learning capabilities for solving tasks once their definitions are learned. Rosie is capable of learning hierarchical symbolic representations of task knowledge,

rather than learning a mapping directly from perceptual representations, and building knowledge over time. These representations enable Rosie to transfer knowledge across tasks, analyze and debug multiple interpretations, and communicate efficiently with the teacher to resolve ambiguities.